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Chapter 5: Local Action Plan Best Bets **Residential Transportation**

DOCUMENT CONTENTS[1]

Most of the best practices for transportation in this section focus on how municipalities use incentives to encourage residents and businesses to modify their transportation uses.

Motor vehicles are major greenhouse gas (GHG) emitters and sources of air, noise and water pollution. Transportation represents about 27% of total U.S. energy consumption and 70% of total petroleum consumption.[2] *Transportation energy consumed by mode is summarized below. Personal transportation represents about 60%, and commercial transport about 40% of total transportation energy consumption.*

"Transportation Demand Management" (TDM) is a term used to describe strategies that result in more efficient uses of transportation resources. Below are highlighted some of the best practices that cities can use to decrease GHG emissions and increase the mobility of the community.

	Trillion BTUs	% of Total Consumption
Automobiles	9,126	34%
Light Trucks (including vans and SUVs)	6,617	25%
Trucks & Private Buses	4,563	17%
Aviation	2,546	10%
Water	1,300	4.9%
Pipeline	1,009	3.8%
Off-highway (construction and agriculture)	680	2.5%
Railroads	607	2.3%
Buses	207	0.8%
Motorcycles	26	0.1%

Table: Vehicle Energy Use[3]

[1] All of the information in this section can be found at Victoria Transportation Policy Institute, unless otherwise noted.
[2] ORNL, *Transportation Energy Book*, Oak Ridge National Laboratories, U.S. Department of Energy.

Make City Pedestrian-Friendly and Bicycle-Friendly

Improve walking and cycling conditions. Establish local walking and cycling plans and fund sidewalk and bike-lane improvements.[4]

According to some estimates, 5-10% of urban automobile trips can reasonably be shifted to non-motorized transport.[5] Shifts from automobile to non-motorized transportation can be particularly effective at energy conservation and emission reductions as short motor vehicle trips have high per-mile fuel consumption and emission rates. Each 1% shift of mileage from automobile to non-motorized modes tends to reduce energy consumption and pollution emissions by 2-4%.

Moreover, a short pedestrian or cycle trip often replaces a longer automobile trip (for example, consumers may choose between shopping at a local store or driving to a major shopping center). Non-motorized transportation improvements are also increase transit use and create more pedestrian accessible land use patterns.[6]

Studies have found that in many communities people would walk more frequently if they had suitable facilities and resources. One U.S. survey found that 38% of respondents would like to walk to work, and 80% would like to walk more for exercise.[7]

The table below summarizes a Canadian public survey indicating high levels of interest in cycling and walking.

Description	Cycle	Walk
Currently use this mode for leisure and recreation.	48%	85%
Currently use this mode for transportation.	24%	58%
Would like to use this mode more frequently.	66%	80%
Would cycle to work if there "were a dedicated bike lane which would take me to my workplace in less than 30 minutes at a comfortable pace."	70%	NA
Support for additional government spending on bicycling facilities.	82%	NA

Table: Active Transportation Survey Findings [8]

However, citizens' ability to walk or cycle depends on city planning. The Victoria Transportation Policy Institute[9] estimates that pedestrian-friendly communities have 5-10 times as many non-motorized trips compared to automobile dependent communities with otherwise similar demographic and geographic conditions.

Best practices for improving walkability and encouraging walking, include:[10]

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[3] Ibid, Table 2.5.
[4] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm92.htm, 26 September 2006.
[5] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm92.htm, 3 October 2006.
[6] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm84.htm, 3 October 2006.
[7] STPP, *Americans Attitudes Toward Walking and Creating More Walkable Communities*, Surface Transportation Policy Project (www.transact.org), 2003.
[8] Environics, *National Survey on Active Transportation*, Go for Green, (www.goforgreen.ca), 1998. *This survey indicates a high level of interest in cycling and walking.*
[9] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm100.htm, 3 October 2006.
[10] A number of guides and resources provide information about best practices:
1) ADONIS, *Best Practice to Promote Cycling and Walking* and *How to Substitute Short Car Trips by Cycling and Walking*, ADONIS Transport RTD Program, European Union (www.cordis.lu/transport/src/adonisrep.htm), 1999. This 300-page catalogue describes dozens of strategies to help improve and encourage walking and cycling, ranging from special facilities, to safety campaigns and traffic management to facilitate street crossing).

Integrate non-motorized transportation into all transport and land-use planning activities.

Educate city planners in non-motorized transportation planning principles.

Increase funds for non-motorized planning relative to the rates of funding for automobile infrastructure.

Insure that all roadways are suitable for walking unless it is specifically prohibited and suitable alternatives are available.

Use current planning practices and design standards, including facility designs that accommodate the widest range of potential users, including people with mobility and visual impairments (disabilities) and other special needs.

Include non-motorized travel in transportation surveys and models.

Create pedestrian-oriented centers and neighborhoods.

Perform user surveys to identify problems and barriers to pedestrian travel.

Use design features and strategies intended to reduce vehicle traffic speeds and volumes on a particular roadway, and other traffic control measures to make street environments safer and more pleasant for walking. [11]

Pedestrian & Bicycle Friendly City

CASE STUDY: Toronto, Canada

The City of Toronto adopted a Pedestrian Charter[12] in October 2002 and was the first city in North America to have such a charter. It reflects the concept that walkability is one of the most important measures of the quality of a city's public realm, its health and vitality. The Charter serves as a guide to decision-makers, both in the city and in the community at large that walking should be valued as the most sustainable of all forms of travel, and that it has enormous social, environmental and economic benefits. It outlines what pedestrians can rightfully expect from the city in terms of meeting their travel needs; to establish principles to guide the development of policies and practices that affect pedestrians; and to identify the features of an urban environment and infrastructure that encourage and support walking. The Charter consists of six principles:

1. Accessibility: Walking is a free and direct means of accessing local goods, services, community amenities and public transit.
2. Equity: Walking is the only mode of travel that is universally affordable, and allows children and youth, and people with specific medical conditions to travel independently.
3. Health and Well-being: Walking is a proven method of promoting personal health and well-being.
4. Environmental Sustainability: Walking relies on human power and has negligible environmental impact.
5. Personal and Community Safety: Walking increases community safety for all by creating an environmental in which people feel safe and comfortable.
6. Community Cohesion and Vitality: A pedestrian-friendly environment encourages and facilitates social interaction and local economic vitality.

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2) Todd Litman, et al., *Pedestrian and Bicycle Planning; A Guide to Best Practices*, VTPI (www.vtpi.org), 2000. Comprehensive guide with extensive references.
3) Zeeger, et al, *Pedestrian Facilities User Guide: Providing Safety and Mobility*, Pedestrian and Bicycle Information Center (www.walkinginfo.org), Highway Safety Research Center, Federal Highway Administration, Publication FHWA-RD-01-102, February 2002.
4) GDOT, *Pedestrian & Streetscape Guide*, Georgia Department of Transportation (www.dot.state.ga.us), Sept. 2003.

[11] For more information on 'traffic calming' techniques see: www.vtpi.org/tdm/tdm4.htm, 3 October 2006.
[12] Toronto Pedestrian Charter, www.toronto.ca/pedestrian/, 26 September 2006.

Implement School and Campus Transportation Management Programs

School and campus transportation management programs encourage parents, students and staff to use alternative transportation when traveling to school, college and universities.[13]

An increasing number of colleges and universities offer free or significantly discounted transit passes to students and staff (sometimes called a "UPASS"). UPASS programs often require students to approve a special fee to fund universal transit passes. The table below summarizes the costs and impacts of several UPASS programs.

University	Year Began	Who May Ride Free	Eligible Riders	Annual Program Cost	Annual Rides	Cost Per Eligible Person	Rides Per Eligible Person	Average Cost per Ride	Ridership Increase
			(1)	*(2)*	*(3)*	*(4)=(2)/(1)*	*(5)=(3)/(1)*	*(6)=(2)/(3)*	*(7)*
UC, San Diego	1969	Students, faculty, staff, emeritus	35,200	$177,700	296,600	$5	8	$0.60	
University of Georgia at Athens	1977	Students	30,000	$275,000	600,000	$9	20	$0.46	
Cal Poly State, San Luis Obispo	1985	Students, faculty, staff, emeritus	17,500	$169,000	531,700	$10	30	$0.32	
Appalachian State University, NC	1980	Students, faculty, staff	13,200	$251,000	361,800	$19	27	$0.69	
University of Pittsburgh, PA	1995	Students, faculty, staff	31,200	$650,000	1,536,900	$21	49	$0.42	60%
UC, Santa Barbara	1986	Students	17,400	$400,200	584,800	$23	34	$0.68	6%
Santa Barbara City College, CA	1995	Students	12,000	$277,000	525,500	$23	44	$0.53	36%
University of Massachusetts at Amherst	1969	Students, faculty, staff	39,000	$972,300	807,500	$25	21	$1.20	
Ohio State University	1997	Students	48,300	$1,400,000		$29			300%
University of Wisconsin at Madison	1996	Students	39,000	$1,200,000	1,600,000	$31	41	$0.75	
Virginia Polytechnic Institute and State University	1983	Students, faculty, staff	32,000	$1,100,000	1,400,000	$34	44	$0.79	
Auraria Higher Education Center (UC Denver)	1994	Students	31,500	$1,204,000	1,965,000	$38	62	$0.61	
UC, Davis	1990	Students	18,500	$719,000	1,800,000	$39	97	$0.40	255%
San Jose State University, CA	1993	Students	27,000	$1,060,000		$39			
UC Boulder	1991	Students, faculty, staff	24,500	$1,000,000	1,500,000	$41	61	$0.67	400%
Marquette University, WI	1995	Students	6,700	$400,000		$60			
University of Illinois at Urbana-Champaign	1989	Students	36,000	$2,200,000	5,800,000	$61	161	$0.38	370%
University of Wisconsin at Milwaukee	1994	Students	20,200	$1,247,400	2,300,000	$62	114	$0.54	27%
UC, Santa Cruz	1972	Students, faculty, staff	12,220	$1,203,800	1,253,047	$99	103	$0.96	
AVERAGES						**$32**	**56**	**$0.57**	

Table: UPASS Program Summary[14]

[13] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm5.htm, 26 September 2006.
[14] Jeffrey Brown, Daniel Hess and Donald Shoup, *Unlimited Access*, Institute of Transportation Studies, UCLA, 1998. Published in *Transportation,* Volume 28, number 3, 2001, pp. 233-267. www.vtpi.org/tdm/tdm5.htm, 18 October 2006.

Students at the following universities voted overwhelmingly (most referenda received 75% or more approval) to support many of these programs, even though it increases their fees. The table on the next page summarizes some campus UPASS programs in North America.

Some campuses use vehicle restrictions[15] and regulations to limit automobile use. For example, some colleges do not provide parking permits to freshmen who live on campus. This encourages students to become more involved in campus activities, and discourages them from taking jobs to finance a car.

Facility managers and administrators often implement campus TDM programs to address a particular problem, such as a parking shortage or traffic congestion on nearby streets. Student and employee organizations are often involved in program planning and management. Some student groups initiate programs to improve their travel options and achieve environmental or community goals.

Campus TDM programs can reduce automobile trips by 10-30%.[16] For example, a program at the University of Wisconsin-Milwaukee reduced student driving by 26%.[17] A University of Washington program reduced total vehicle trips to campus by 16% during its first year of operation.[18] A study in Bilboa, Portugal found that students are relatively sensitive to bus prices, rail frequency and overall transit service quality. A combination of increased rail service frequency and reduced bus fares can significantly increase ridership and help reduce local traffic congestion and pollution emissions at campuses.[19]

Best practices for Campus TDM programs include:

Provide a variety of alternative transportation services, including specialty services such as transport for recreational trips and special events.

Involve administrators, managers, students and staff in planning and implementing the program.

Emphasize benefits to students and staff from improved transportation services, including financial savings, expanded choice, exercise opportunities (for cycling and walking) and environmental benefits.

Improve pedestrian and bicycle conditions on campus and surrounding areas.

Pedestrian & Bicycle Friendly City

CASE STUDY: Stanford, CA[20]

Stanford University in Palo Alto, California, expanded its building capacity by 25%, adding more than 2.3 million square feet of research and teaching buildings, public facilities and housing—without increasing peak period vehicle traffic. By 2000, 1.7 million square feet of new buildings had been developed, while automobile commute trips were reduced by 500 per day.

To accomplish this the campus transportation management plan included:

A 1.5 mile transit mall

Free transit system with timed transfers to regional rail

Bicycle network

[15] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm33.htm, 3 October 2006.
[16] Ibid.
[17] James Meyer and Edward Beimborn, *Evaluation of an Innovative Transit Pass Program: the UPASS*, Wisconsin Department of Transportation (www.uwm.edu/dept/cuts/upassum.htm), 1996.
[18] (Michael E. Williams and Kathleen L. Petrait, "U-PASS: A Model Transportation Management Program that Works," *Transportation Research Record 1404*, 1993, pp. 73-81; website: www.washington.edu/upass.
[19] J. Bilbao Ubillos and A. Fernandez Sainz, "The Influence Of Quality and Price On The Demand For Urban Transport: The Case Of University Students," *Transportation Research A*, Vol. 38, No. 8 (www.elsevier.com/locate/tra), October 2004, pp. 607-614; website: www.vtpi.org/tdm/tdm5.htm, 26 October 2006.
[20] Stanford University Parking & Transportation Services, transportation.stanford.edu, 26 September 2006.

Staff parking "cash-out" (offering commuters cash equivalent if they choose not to use subsidized parking)

Ridesharing program

Other transportation demand management elements

By using this approach, the campus was able to add $500 million in new projects with minimal planning or environmental review required for individual projects. The campus also avoided significant parking and roadway costs. Planners calculate that the university saves nearly $2,000 annually for every commuter shifted out of a car and into another mode.

Public benefits included decreased congestion and improved safety on surrounding roadways and regional traffic system, reduced air, noise and water pollution, and improved local transit options. All of Stanford's transportation services are available to students, employees and the general public.

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Encourage or Require Implementation of Commute Trip Reduction Programs

Implementing commute trip reduction (CTR) programs encourages employees to use alternative modes when traveling to work.

CTR[21] programs must be able to meet employees' diverse and changeable needs. Many employees can use transportation alternatives part-time, if given suitable support and incentives. For example, many employees can carpool, telecommute or work part time two or three days a week. Some employees can bicycle commute part of the year, as well.

Some jurisdictions mandate CTR programs for certain types of employers, such as those with more than 50 daytime employees at urban worksites. These have been criticized as "laws forcing workers to give up their cars," but that is not true. Such laws only require *employers* to develop a program with suitable incentives, taking into account location and employee requirements. They do not require individual employees to change their commute pattern.

U.S. EPA's Commuter Choice program[22] has established National Standards of Excellence in Commuter Benefits, and the Commuter Choice Leadership Initiative (CCLI) awards. To meet National Standard of Excellence employers must offer:

A guaranteed ride home

Employer-paid transit/vanpool benefits - employer provides at least $30 per month in benefits or the full value of commuting costs.

Parking Cash Out - employer provides the option of cash instead of parking. CCLI requires the employer to offer at least $30 per month and at least 75% of the actual saved costs of parking to classify this option as a primary benefit.

Employer-defined benefits—allows employers to use other strategies to achieve the standards.

Employers must achieve demonstrable benefits the Federal Commuter Choice Team must agree if an option is to qualify.

Other TDM incentives are treated as supporting strategies to these primary activities. These include:

Ridesharing or carpool matching

Shuttles from transit stations

[21] Victoria Transportation Policy Institute CTR Programs, www.vtpi.org/tdm/tdm9.htm, 26 September 2006.
[22] Best Workplaces for Commuters, www.commuterchoice.gov, 3 October 2006.

Preferred parking for carpools/vanpools

Secure bicycle parking, showers and/or lockers

Financial or recognition incentives for bicyclists or walkers

Benefits and Costs

Shifting commute travel from peak period automobile trips to alternative times and modes can provide a variety of benefits

Employee Benefits

CTR programs can benefit employees by increasing their travel options, reducing travel stress and by providing financial savings. Some studies show that many workers place a high value on having commute alternatives.[23] Even people who generally enjoy driving do not necessarily want to drive to work every day. At the margin (i.e., relative to current levels of vehicle travel), many consumers would probably prefer to drive somewhat less, provided that they had good mobility alternatives with adequate comfort, convenience and prestige.

Employer Benefits[24]

CTR programs can benefit employers by reducing their parking costs or freeing up parking for customers. Programs that improve travel choices or provide financial benefits tend to improve employee morale and recruitment, and reduce employee turnover. For example, employee turnover at the Calvert Group (an investment firm) declined from 25% to 12% after a comprehensive package of commute benefits were introduced, and other surveys find that telecommuting reduces employee turnover by 16%.[25]

Community Benefits

CTR is particularly effective at reducing traffic congestion since commute trips are the largest share of peak-period travel. It can reduce road, on-street parking and traffic service costs. Along with reducing GHG emissions, it can also help reduce pollution and crash risk, and increase demand for alternative modes, providing economies of scale. By reducing road and parking facility requirements, it supports more efficient land use, compact development and more pedestrian-oriented streetscapes.

CTR costs

Costs include program administration expenses and any additional employee time requirements.[26] Administrative costs typically average $1-8 per employee per month to cover program planning, marketing, management and evaluation activities.[27] A survey by Pollution Probe found that the American employers with successful CTR programs spend an average of $156 annually per employer, with the majority spending $33 to $89.[28] However, there are also savings and benefits to businesses that may offset much of these costs.[29]

Some costs and benefits are economic transfers, in which costs to one group are offset by benefits to another. For example, charging motorists directly for using parking

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[23] Raymond Novaco and Cheryl Collier, *Commuting Stress, Ridesharing, and Gender: Analyses from the 1993 State of the Commute Study in Southern California*, University of California Transportation Center (Berkeley), Working Paper #208 (www.uctc.net), 1994.

[24] The *SMART Trip Reduction Manual* published by Pollution Probe (2001) provides information on calculating the benefits of CTR programs to employers and employees. (www.pollutionprobe.org/Publications/Air.htm), 2001.

[25] EPA, *What Employers are Saying About Commuter Benefits*, Report EPA420-F-01-013, U.S. Environmental Protection Agency, 2001.

[26] CTR Task Force, *2001 Report to the Washington State Legislature*, Washington State Department of Transportation, Transportation Demand Management Office (www.wsdot.wa.gov/tdm/tripreduction/download/CTR_Report_01.pdf), December 2001, also archived www.natcapsolutions.org/ClimateManual/Cities/Chapter5/BestBets/TransportationResidential/CTR_Report_01.pdf, 26 October 2006.

[27] Ali Modarres, "Evaluating Employer-Based Transportation Demand Management Programs," *Transportation Research Record A*, Vol. 27, No. 4, 1993, pp. 291-297.
Waldo Lopez-Aqueres, "Employer Trip Reduction Programs: How Costly? Who Pays?" *TDM Review*, Association for Commuter Transportation (tmi.cob.fsu.edu/act/act.htm), 1994.

[28] The *SMART Trip Reduction Manual* published by Pollution Probe (2001) www.pollutionprobe.org/Publications/Air.htm, 26 October 2006.

[29] Phil L. Winters and Sara J. Hendricks, *Quantifying The Business Benefits of TDM*, Center for Urban Transportation Research, for the Office of Research and Special Programs, USDOT, www.nctr.usf.edu/html/416-11.htm, 2003, 26 October 2006.

facilities increases costs to automobile commuters but provides additional revenue to businesses.[30] Financial incentives for commuters that choose alternative forms of transportation represent an economic transfer from employers to employees, and often substitute for other employee benefits such as free parking.[31]

Commute Trip Reductions

CASE STUDY: Trip Reduction Ordinances[32]

Some jurisdictions have ordinances that require or encourage commute trip reduction programs. Below are some examples.

Washington State's Commute Trip Reduction Law (CTR)[33] is designed to reduce traffic congestion, pollution and fuel consumption. Employers in major urban areas with more than 100 employees at a worksite are required to develop CTR programs that encourage employees who drive alone to work to consider using an alternative commute mode such as buses, vanpools, carpools, biking, walking, telecommuting and flexible work schedules.[34]

Maricopa County, AZ [35] requires major worksites with 50 or more employees to implement trip reduction programs.[36]

Cambridge, MA[37] has an ordinance requiring businesses to implement TDM at new developments.[38]

South Notomas, CA[39] allows developers to use TDM programs, such as participation in a TMA, to help gain municipal acceptance of new developments.[40]

Bay Area, CA[41] requires all public and private employers with 100 or more employees at a work site to establish employee trip reduction targets for various locations and years, and identify various strategies to help achieve these targets.[42]

Pima County, AZ under the PIMA Association of Governments,[43] established Travel Reduction Ordinances (TRO) to improve air quality and reduce traffic congestion by increasing alternate mode usage and reducing overall motor vehicle travel for commute trips.[44]

[30] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm26.htm, 3 October 2006.
[31] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm8.htm, 3 October 2006.
[32] University of South Florida Trip Reduction Ordinances, www.nctr.usf.edu/clearinghouse/tro, 3 October 2006.
[33] Washington State Ridesharing Organization, wsro.net/, 3 October 2006
Washington State Department of Transportation Environmental Services website, www.wsdot.wa.gov/environment/, 3 October 2006.
[34] Contact: Mr. Keith Cotton, Commute Options Developer, (360) 705-7910, cottonk@wsdot.wa.gov.
[35] Valley Metro Rideshare, www.valleymetro.org/Rideshare/default.asp, 3 October 2006.
[36] Contact: 602.262.RIDE, rideshareinfo@ValleyMetro.org.
[37] Cambridge Parking and Transportation Demand Management, www.cambridgema.gov/cdd/et/tdm/index.html, 3 October 2006.
[38] Contact: Jean Clark, the City's PTDM Planning Officer, at jclark@cambridgema.gov, (617) 349-4673.
[39] South Natomas Transportation Management Association, www.SouthNatomasTMA.org, 3 October 2006.
[40] Contact: Ken Loman, Executive Director, (916) 646-0928, ken@sntma.org.
[41] Bay Area Air Quality Management District, www.baaqmd.gov/, 3 October 2006
Or to view the ordinance, www.arb.ca.gov/DRDB/BA/CURHTML/R13-1.HTM, 3 October 2006.
[42] Contact: Juan Ortellado, Manager, Grant Programs, (415) 749-5000.
[43] Pima Association of Governments Travel Reduction Program, www.pagnet.org/TRP/, 3 October 2006.
[44] Pima Travel Reduction Ordinance, www.pima.gov/cob/code/c1711.html#3796, 3 October 2006.

Implement Parking Management Programs[45]

Managing the type and number of parking lots can reduce pavement space and vehicle use in a city. A variety of techniques allow cities to incorporate GHG reduction into parking management systems. For example, implementing storm water management fees based on the amount of pavement on a lot, and per-space parking levies, act as incentives to property owners to reduce parking supply and implement transportation management programs.

Strategic parking management programs can also maximize parking space, and encourage alternative transport that reduce the number of parking spaces needed in a community. The next table summarizes these parking management strategies, and indicates the potential reduction in parking supply that they can typically provide.

Management Strategy	Description
Strategies That Result In More Efficient Use of Parking Facilities	
Shared Parking	Parking spaces are shared by more than one user allowing facilities to be used more efficiently.
Regulate Parking Facility Use	More convenient and visible parking spaces are managed and regulated to give priority to higher-value trips, increase efficiency and user convenience.
More Accurate and Flexible Standards	Reduce or adjust standards to more accurately reflect demand at a particular location, taking into account geographic, demographic and economic factors.
Parking Maximums	Establish maximum in addition or instead of minimum parking standards to avoid excessive parking supply.
Remote Parking	Encouraging longer-term parkers to use off-site or fringe parking facilities, so more convenient spaces are available for priority users.
Improving User Information and Marketing	Provide convenient and accurate information on parking availability and price, using maps, signs, brochures and electronic communication.
Smart Growth and Location Efficient Development	Encourage more clustered, mixed, multi-modal, infill development, which allows more shared parking and use of alternative modes.
Improved Walkability	Improve pedestrian conditions to allow parkers to conveniently access more parking facilities, increasing the functional supply in an area.
Transportation Management Associations	Transportation Management Associations are private, non-profit, member-controlled organizations that can provide a variety of services that encourage more efficient use of transport and parking resources in an area.
Increase Capacity of Existing Parking Facilities	More parking spaces can sometimes be provided by using currently wasted space, sizing spaces for smaller vehicles and motorcycles, and using car stackers.
Strategies That Reduce Parking Demand	
Transportation Demand Management Programs	Various strategies and programs can encourage more efficient travel patterns, which reduces automobile trips and parking demand.
Parking Pricing	Charge motorists directly for using parking facilities, and set fees to encourage efficient use of parking facilities.
Improve Parking Pricing Methods	Use of more convenient and effective parking pricing techniques to make parking pricing more acceptable and cost effective.
Commuter Financial Incentives	Parking cash out and transit benefits give commuters a financial incentives to shift modes and reduce parking demand.
Unbundle Parking	Rent or sell parking spaces separately from building space, so occupants pay for just the number of parking spaces that they use.
Tax Parking Facilities	Impose special taxes on parking facilities and commercial parking transactions.
Improve Enforcement and Control	Enforcement should be consistent, fair and friendly. Parking passes should have clear limitations regarding where, when and by whom they may be used, and these limitations should be enforced.
Bicycle Facilities	Supply bicycle parking, storage and changing facilities instead of some automobile parking spaces.

Table: Typical Parking Management Strategies

[45] Victoria Transportation Policy Institute, www.vtpi.org/park_man.pdf, also archived at, www.natcapsolutions.org//ClimateManual/Cities/Chapter5/BestBets/TransportationResidential/park_man.pdf, 26 September 2006.

Strategies that Reduce Negative Impacts	
Develop Overflow Parking Plans	Encourage use of remote parking facilities and promote use of alternative modes during peak periods, such as busy shopping times and major events.
Address Spillover Problems	Address spillover parking problems directly with management, pricing and enforcement strategies.
Parking Facility Design and Management	Improved parking facility design to address safety, stormwater management, user comfort, security and aesthetic objectives.

Table: Typical Parking Management Strategies cont.

The table below indicates the typical reductions in parking requirements provided by various parking management strategies, and indicates those that also tend to reduce vehicle traffic.

Strategy	Parking Requirement Reductions			Reduce Vehicle Traffic
	Low	Medium	High	
Shared Parking	10%	20%	30%	
Parking Regulations	10%	20%	30%	
More Accurate Standards	10%	20%	30%	
Parking Maximums	10%	20%	30%	
Remote Parking	10%	20%	30%	
Smart Growth	10%	20%	30%	✓
Walking and Cycling Improvements	5%	10%	15%	✓
Increase Capacity of Existing Facilities	5%	10%	15%	
Mobility Management	10%	20%	30%	✓
Parking Pricing	10%	20%	30%	✓
Improve Pricing Methods	NA	NA	NA	✓
Financial Incentives	10%	20%	30%	✓
Unbundle Parking	10%	20%	30%	✓
Parking Tax Reform	5%	10%	15%	✓
Bicycle Facilities	5%	10%	15%	✓
Improve User Information	5%	10%	15%	✓
Improve Enforcement and Control	NA	NA	NA	
Transportation Management Associations	NA	NA	NA	✓
Overflow Parking Plans	NA	NA	NA	
Address Spillover Problems	NA	NA	NA	
Parking Facility Design	NA	NA	NA	

Table: Typical Reductions in Parking Requirements and Vehicle Traffic

This indicates the typical reductions in parking requirements relative to conventional practices, and whether a parking management strategy tends to reduce vehicle traffic, thereby providing additional benefits. NA indicates strategies that do not directly affect parking requirements.

How to Implement

Parking management is usually implemented by local governments or individual businesses in response to specific parking and traffic problems. Some parking management programs are coordinated by regional governments. Concerns over an immediate parking problem can instigate development of a comprehensive parking planning process. Transportation engineers and planners, either within public agencies or hired as consultants, are usually responsible for performing parking studies, evaluating parking solutions and developing parking management plans. It is important, though, that parking management be included in a climate protection program, and not left to the traditional planners.

Below is the typical five-step process for developing a contingency-based[46] parking management plan:

1. Define general problems to be addressed (climate protection, parking congestion, traffic congestion, excessive parking facility costs, poor pedestrian environments, etc.) and the geographic areas to be considered.
2. Perform the following studies:
   - A parking supply inventory (how many spaces exist of each type of parking: public and private, on- and off-street, short- and long-term, free and paid, etc.) for each geographic area.
   - A parking utilization study (what portion of each type of parking is used at various time, particularly peak-periods) for each geographic area.
   - Projections of how parking supply and demand are likely to change in the future, taking into account expected changes in land use, population, commercial activity, travel patterns, etc.
   - Use this information to identify when and where parking supply is or will be inadequate or excessive.
3. Identify potential solutions.[47]
4. Work with stakeholders to evaluate the effectiveness, benefits, costs, equity impacts, feasibility and barriers of each potential solution. Use this information to prioritize these options.
5. Develop an integrated parking plan that identifies changes in policies and practices, tasks, responsibilities, budgets, schedules, etc.

Parking Management Benefits

Efficiency and Savings
A comprehensive parking management program that includes several strategies (shared parking,[48] more accurate parking requirements, pricing, cash out,[49] etc.) can often reduce parking requirements by 30-50% compared with generous minimum parking requirements, unpriced parking, and each space assigned to an individual motorist. With appropriate parking management motorists still have adequate parking, although they may need to walk somewhat farther, and pay directly rather than indirectly for parking.

The magnitude of savings that result from parking management depends on specific conditions, including the cost per parking space and how much parking can be reduced.

Parking Management Programs

CASE STUDY: Chattanooga, TN

To encourage downtown development the Chattanooga Area Regional Transit Authority developed peripheral parking garages with free shuttle service.[50] By constructing parking facilities at either end of the business district, the system intercepts commuters and visitors before they drive into the city center, reducing traffic problems. The garages' parking revenues finance the free shuttle buses. They depart from each garage every five minutes all day, every day, and pass within walking distance of most downtown destinations. The electric-powered shuttles transport approximately one million riders each year, making shuttle-served property attractive to businesses. Since 1992, when the shuttle service began, over $400 million has been invested in the downtown, including a major freshwater aquarium, over 100 retail shops and 60 restaurants.

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[46] A contingency-based strategy deals with uncertainly by identifying specific responses to possible future conditions. www.vtpi.org/tdm/tdm123.htm, 3 October 2006.
[47] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm72.htm, 3 October 2006.
[48] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm89.htm, 3 October 2006.
[49] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm8.htm, 3 October 2006.
[50] USEPA, *Parking Spaces / Community Places: Finding the Balance Through Smart Growth Solutions*, Development, Community, and Environment Division (DCED); U.S. Environmental Protection Agency, www.epa.gov/smartgrowth/parking.htm, 2006.

Better Coverage of Public Transportation[51]

Making public transportation more accessible is an important step for increased public transit usage. This can be done through information programs, business subsidies for employee use of mass transit; higher urban parking fees to encourage public transit; safer transit stations and stops and convenient fare structures and payment systems.

Transit encouragement programs are usually implemented by transit agencies, often with support from other government agencies and businesses. It is usually best to begin with a survey of potential users to determine what improvements and marketing strategies could increase ridership, before developing a transit plan. For example, one transportation user survey[52] from the greater Vancouver, Canada area found that discretionary transit riders (those that have the option of traveling by automobile):

Believe that mass transit travel can be less stressful than driving a car

Believe that mass transit travel is more convenient than driving for some trips

Believe that mass transit travel saves wear-and-tear on their car

Want transit service within convenient walking distance of their homes and destinations

Want clean transit vehicles and safe waiting areas

Want reliable, on-time service with good connections

Want fast, direct service

Stanley and Hyman (2005) identify a number of factors and strategies that tend to increase transit ridership in an area, including improved service, reduced fares, marketing, and more integrated planning and partnerships with other organizations.[53]

A study[54] comparing various European regions and cities identified the following transport policies that tend to increase public transit ridership:

Availability of adequate capital funding for public transport

Relatively low public transport fares

Integration of public transport services (timed connections, new journey opportunities etc)

Restraint of parking and reallocation of road space to more sustainable modes

Integration of regional, multimodal ticketing systems

Long-term planning and implementation of these policies. To be effective, these polices must be in place for a long time (a decade or more), which implies consistent political consensus on their efficacy

Adequate regulation of bus transit systems; the most successful systems are run on a franchised (quality contract-type) basis.

Strategies include:

Fare reductions

New fare options, particularly discounted tickets and passes

Free transit areas

More convenient routing (e.g., eliminating the need for transfers)

Regularized schedules (such as having a bus every hour and half-hour)

Special route to serve particular travel requirements, such as access to employment centers

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[51] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm112.htm, 26 September 2006.
[52] TransLink, *Regional Travel Survey - Revised*, TransLink Marketing Research Department, January 2003, www.translink.bc.ca/files/polls_surveys/regtravel.pdf also archived at, www.natcapsolutions.org//ClimateManual/Cities/Chapter5/BestBets/TransportationResidential/regtravel.pdf, 30 October 2006.
[53] Robert G. Stanley and Robert Hyman, *Evaluation Of Recent Ridership Increases*, TCRP Research Results Digest 69, Transportation Research Board (www.trb.org), 2005.
[54] Colin Buchanan and Partners, *Transferability Of Best Practice In Transport Policy Delivery*, Scottish Executive July 2003, www.scotland.gov.uk/library5/development/bpitp-00.asp, 30 October 2006.

Government agencies (such as the Federal Transit Administration) and professional organizations (such as the American Transit Association) provide resources for Transit Encouragement program planning. These include:

Survey potential users and evaluate travel trends to determine what improvements and marketing strategies are likely to increase ridership.

Consider using innovative marketing techniques, price discounts and new fare collection methods (such as "smart cards") to attract new riders.

Identify and respond to the various market segments that they can serve, including Basic Mobility for people who are transportation disadvantaged, and fast, convenient travel for urban commuters.

Public Transportation

CASE STUDY: Boulder, CO

Starting in 1989, the city of Boulder, Colorado began implementing a demonstration transit service using a fleet of small, colorfully designed buses to provide high frequency, inexpensive and direct service within the city. And thus, the first Community Transit Network bus, the HOP, was born. Today, there are six bus routes in the Community Transit Network—HOP, SKIP, JUMP, BOUND, DASH and STAMPEDE. All have a unique identity and amenities shaped with community input and direction. In 1990, Transit ridership was about 5,000 riders daily for all local and regional routes in and out of Boulder. In 2002, ridership was at a daily average of about 26,000, a 500% increase. The city of Boulder partnered with the city of Longmont and Boulder County to add another high-frequency bus route called the BOLT on a local highway in 2004. [55]

Benefits beyond GHG emission reductions of the Community Transit Network:

Provides a convenient transit alternative to the single occupancy vehicle.

Uses neighborhood-scaled vehicles to fit the context of Boulder.

Strengthens the local economy by providing easy access around Boulder and to and from surrounding communities.

Provides wheelchair accessible transportation.

Reduces air pollution by using clean-burning fuels.

Alleviates traffic congestion.

Minimizes the need for roadway expansion and provides reliable, high frequency service.

Operates clean, comfortable, human-scaled vehicles, with special amenities such as music.

Promotes a positive transit image with attractive vehicles and on-going marketing support.

Accepts Eco Passes (transit passes for students and residents of certain neighborhoods).

Includes bike racks, holding two bikes at one time, that allow for integration of travel.

In November 2000, residents of the Forest Glen neighborhood in the city of Boulder voted to form a General Improvement District (GID) to provide Eco Pass transit passes for all neighborhood residents including home owners and renters. These passes are paid for by residents in the Forest Glen as part of their annual property tax. The pass allows unlimited riding on all RTD buses, Light Rail service to Denver International Airport, downtown Denver and Eldora Mountain Resort.

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[55] City of Boulder Transportation website, www.ci.boulder.co.us/index.php?option=com_content&task=view&id=707&Itemid=1206, 26 September 2006.

Car Sharing Programs and Installation of Park and Ride Facilities[56]

Rideshare

Rideshare programs typically provide carpool matching, vanpool sponsorship, marketing programs, and incentives to reduce driving. Rideshare incentives may include giving High Occupant Vehicles (HOV) priority[57] (e.g., HOV highway lanes), preferential parking spaces, and awards. Some employers offer commuter financial incentives[58] such as a cash payment to employees who carpool, or a voucher that covers vanpool fees, provided as an alternative to a free parking space. Because they have significant economies of scale (the more people who register, the more effective they are at successfully matching riders), it is helpful if one well-publicized ride-matching program serves an entire geographic region.

Rideshare programs that include incentives such as HOV priority often reduce commute trips by 10-30%[59]. If implemented without such incentives travel impacts are usually smaller. Evans and Pratt (2005) describe several worksites where 5-20% of employees commute by vanpool. The most effective programs tend to have paid parking, subsidies for alternative modes and other incentives to encourage reduced automobile commuting.

Ridesharing can reduce peak-period vehicle trips and increase commuter's travel choices. It reduces congestion, road and parking facility costs, crash risk and pollution emissions. Ridesharing tends to have the lowest cost per passenger-mile of any motorized mode of transportation, since it makes use of a vehicle seat that would otherwise be empty. Ridesharing provides consumer financial savings (as estimated in the table below), and time savings if there are HOV priority facilities. Crash risk declines due to fewer vehicles on the road.[60] Rideshare programs improve transportation options and are particularly helpful to commuters who cannot drive or lack a reliable automobile.[61]

Organizations such as the Association for Commuter Transportation and Commuter Connections can provide advice and resources for developing an

Round Trip Miles	Drive Alone	3-Rider Car Pool	10-Rider Van Pool
30	$193	$64	$31
40	$257	$86	$37
50	$321	$107	$43
60	$386	$129	$50
70	$450	$150	$56
80	$514	$171	$63

Table: Estimated Monthly Commuting Costs

[56] Victoria Transportation Policy Institute Ridesharing, www.vtpi.org/tdm/tdm34.htm, 3October 2006.
[57] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm19.htm, 3 October 2006.
[58] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm8.htm, 3 October 2006.
[59] Philip Winters and Daniel Rudge, *Commute Alternatives Educational Outreach*, National Urban Transit Institute, Center for Urban Transportation Research, USF (Tampa; www.cutr.eng.usf.edu), 1995.
[60] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm58.htm, 3 October 2006.
[61] The *SMART Trip Reduction Manual* published by Pollution Probe (2001) provides information on calculating the benefits of ridesharing programs to employers and employees. (www.pollutionprobe.org/Publications/Air.htm), 2001, 26 October 2006.

effective ridesharing program. A study in the Seattle area identified several ways of improving and increasing vanpooling.[62]

Ride share best practices:

Should be implemented as part of a comprehensive TDM Program.

Should include ridematching services, HOV priority, and other trip reduction strategies.

Ridematching services should cover a large geographic area (such as an entire region) in order to create the largest possible pool of users.

Transportation agencies, businesses and employees should all be involved in planning Rideshare Programs.

Provide incentives to attract and retain rideshare users, such as mileage-points and vehicle insurance discounts.

Car Sharing & Park and Ride Programs

CASE STUDY: King County, WA

RideShare Online,[63] launched in 2001, was the first self-serve, regional public Internet ridematching service in the nation. RideshareOnline instantly matches commuters with carpool or vanpool partners with a similar daily commute in nine Puget Sound area counties, including King, Pierce, Snohomish, Kitsap, Thurston, Island, Mason, Skagit and Whatcom counties.

"This new service puts the power into the hands of commuters," said King County Executive Ron Sims. "Instead of sending in applications and information and waiting for a reply, you can go online anytime day or night to find names in our database of 9,000 registered commuters, e-mail them directly yourself, and within minutes you could be hearing back from a potential rideshare partner."[64]

Online registration is simple. After typing in their e-mail address and choosing a password, users enter their work location and the starting point of their commute -- either a home address or a nearby intersection. To preserve privacy, home addresses are not displayed publicly. They enter their weekly work schedule and any daily variations. By return e-mail they receive a confirmation code to complete their registration. They can instantly see a list of rideshare matches to whom they may e-mail a rideshare request.

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Park and Ride

Park & Ride[65] facilities are usually implemented by regional transportation or transit agencies. In some cases, existing, underutilized parking (such as a mall parking lot) is designated for Park & Ride use. Patrols and lighting are sometimes provided to address security concerns that users may have about leaving their vehicles.

Benefits and Costs

By encouraging shifts to transit and ridesharing, Park & Ride facilities reduce urban highway traffic congestion and worksite parking demand. These benefits can be significant since Park & Ride tends to be most effective where traffic congestion and parking problems are worst. However, automobile Park & Ride only provides modest reductions in local road traffic,

[62] Bryon York and David Fabricatore (2Plus), *Puget Sound Vanpool Market Assessment*, Office of Urban Mobility, WSDOT (www.wsdot.wa.gov/Mobility/TDM/vanpoolmarket.htm), 2001.
[63] Rideshare Online, www.RideshareOnline.com, 3 October 2006.
[64] King County Department of Transportation, www.metrokc.gov/kcdot/news/picturearch/pw010319_ridematch.htm, 3 October 2006.
[65] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm27.htm, 26 September 2006.

pollution, energy use and consumer costs, since a local automobile trip is still made. Bicycle Park & Ride can provide greater economic and environmental benefits. Shopping centers adjacent to Park & Ride facilities tend to benefit from additional shopping by the commuters who park there.[66]

Costs are primarily associated with facility construction and operation. Construction costs typically average several thousand dollars per space, which is usually lower than the costs of providing parking at city centers due to lower land values.

Best Practices for Park & Ride facilities:

Facilities should be developed as part of an overall transit and rideshare improvement program.

Facilities should be located within view of businesses or homes, for the sake of security.

Facilities should include bike storage lockers, or other secure bike storage if demand exists.

Facilities should have adequate lighting, landscaping and other amenities (bus shelters, garbage cans, etc.).

It is usually best to have several smaller Park & Ride facilities in different locations, rather than one large one.

Car Sharing & Park and Ride Programs

CASE STUDY: Space Coast Area Transit, Florida

The Space Coast Area Transit system[67] was established in 1974 and has been a leader in motor transportation ever since. In 2003, SCAT was awarded the prestigious Outstanding Public Transportation System Award by the American Public Transportation Association. One of SCAT's most successful programs has been SCAT Park-and-Ride, which the agency promotes as part of its Commuter Assistance program. It identifies the following benefits to employers of using Park & Ride:

1. Reduced on-site parking
2. Employer/Employee tax credits
3. Improved Employee Recruitment and Retention
4. Improved Customer Service and Employee Morale
5. Improved Corporate Image
6. Bottom-Line, Profitability Goes Up

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Location Efficient Mortgages[68]

Location efficient mortgages give borrowers lower rates if they live near to public transit. The rationale is that the lower costs will make the borrower better able to meet mortgage payments, thus reducing risk. Location Efficient Mortgages (LEMs) are implemented by residential mortgage lenders, often with the support and encouragement of government agencies such as Fannie Mae and the Canadian Mortgage and Housing Corporation. Lenders use a model to determine which locations have lower transportation costs, and therefore can qualify for higher mortgage payments. The following factors can be considered in such developments:

Proximity to high quality transit (such as a rail transit station, or a bus line with frequent service)

Walking and cycling conditions

[66] Francis Wambalaba and Julie Goodwill, *Evaluation of Shared Use Park & Ride Impact on Properties*, National Center for Transit Research, University of South Florida (www.nctr.usf.edu), April 2004, 26 October 2006.
[67] Space Coast Area Transit, www.ridescat.com/aboutscat/history.php, 3 October 2006.
[68] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm22.htm, 3 October 2006.

Number of public services within convenient walking distance (schools, shops, parks, medical services, pharmacy, etc.)

Carshare services within convenient walking distance

Options for residents who do not own an automobile to not pay for parking

Location efficient developments are designed and located to improve overall accessibility and affordability of residential and commercial real estate. They are often implemented as part of "Smart Growth"[69] and "New Urbanist"[70] planning.[71] The following criteria can be used to evaluate whether a development qualifies for a location efficient mortgage:

Is it located in an urban area within a half-mile of quality public transit?

Does it include, or is it located near, commonly-used public services such as grocery stores, video stores and public schools?

Will it reduce dependency on automobiles?

Does it have a minimum density of 20 units per acre?

Does it have at least 20 units?

Is it reflect good design features?
Is it being developed with substantial community input?

Does it include a significant portion of affordable housing units?

Travel Impacts

Per capita automobile travel is often 20-50% lower in location efficient developments than in automobile-dependent, urban fringe locations. Table 1 summarizes the projected vehicle miles traveled (VMT) reduction impacts of various location-efficient, infill developments.

Location	Description	VMT Reduction
Atlanta	138-acre brownfield, mixed-use project	15-52%
Baltimore	400 housing units and 800 jobs on waterfront infill project	55%
Dallas	400 housing units and 1,500 jobs located 0.1 miles from Dallas Area Rapid Transit (DART) station	38%
Montgomery County	Infill site near major transit center	42%
San Diego	Infill development project	52%
West Palm Beach	Auto-dependent infill project	39%

Table: Infill VMT Reductions[72]

Location efficient developments and mortgages can provide several benefits:

Consumers benefit from more housing, transportation choices and financial savings. Non-drivers, in particular, benefit from having housing options designed for maximum accessibility, and financial savings from reduced parking costs.

Developers can benefit from having more design flexibility, including more opportunities for infill development, reduced parking costs, and because LEMs increase the amount a household can spend on housing. It creates new markets and financing options.

Urban neighborhoods can benefit from more opportunities for middle-class infill development, fewer motor vehicles and less vehicle traffic.

By reducing per capita vehicle ownership use, Location Efficient Development can reduce regional traffic congestion, road and parking facility costs, traffic crashes, pollution and sprawl.

Regional economies tend to benefit when consumers shift

[69] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm38.htm, 3 October 2006.
[70] Victoria Transportation Policy Institute, www.vtpi.org/tdm/tdm24.htm, 3 October 2006.
[71] Danielle Arigoni, *Affordable Housing and Smart Growth: Making the Connections*, Subgroup on Affordable Housing, Smart Growth Network (www.smartgrowth.org) and National Neighborhood Coalition (www.neighborhoodcoalition.org), 2001.
[72] CCAP, *State and Local Leadership On Transportation And Climate Change*, Center for Clean Air Policy (www.ccap.org), 2003, 26 October 2006.

their transportation expenditures from vehicles and fuel to transit services or general consumer goods.

Here are some specific recommendations for implementing Location Efficient Developments and Mortgages[73]:

A location efficient development should include a variety of land use and transportation features that improve access and mobility options, including pedestrian and cycling improvements, transit improvements, and mixed land use.

It should also include a range of housing types and prices, so that people in various lifecycle stages and income classes can choose such housing.

Parking requirements should be reduced or eliminated for location efficient housing. Rather than including parking with housing, parking should be rented separately, so households only pay for the amount of parking they actually use.

Parking should be managed to avoid spillover problems.

Location Efficient Mortgages

CASE STUDY: Denver, CO

Denver Initiative to Boost Affordable Housing Near Transit Stations[74]

The Colorado Housing and Finance Authority[75] and seven metro Denver cities will collaborate on the sale of $53 million private activity bonds (tax-exempt bonds issued by the government for the purpose of providing special financing benefits for qualified projects) to support development of low- and moderate-income rental housing near RTD transit stations along the six-line - a 150-mile rail network to be developed during the next 12 years. At least 51 of the 57 rapid-transit stations that will be built lend themselves to mixed-use development that should include affordable housing.

Affordable housing that will be eligible for assistance from the authority and the seven cities must be within 1,500 feet of a planned or existing transit station. Each project must include 50 or more dwelling units.

At least 75% of the rental units must be for individuals or families whose income is at or below the area's median income, adjusted for family size. Other provisions ensure some housing is reserved for low-income residents. Developers who participate in the transit-oriented affordable-housing program also may be eligible for low-income-housing tax credits that can generate equity for the projects.

Calling this FasTracks program[76] "the single most ambitious integrated transit solution in the history of the United States," Denver Mayor John Hickenlooper said it will lead to the formation of "small villages" around transit stations where people can live, work and shop without being overly dependent on automobiles.

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[73] Danielle Arigoni, *Affordable Housing and Smart Growth: Making the Connections*, Subgroup on Affordable Housing, Smart Growth Network (www.smartgrowth.org) and National Neighborhood Coalition (www.neighborhoodcoalition.org), 2001.
[74] Metro Mayor Caucus, www.metromayors.org/Housing.html, 3 October 2006.
[75] Colorado Housing and Finance, www.colohfa.org/, 3 October 2006.
[76] Denver Fastracks Plans, www.rtd-denver.com/fastracks/index.html, 3 October 2006.

Provide Incentives for Hybrid and Low Emission Vehicle Use

While the ideal (from a climate perspective) is that citizens have access to alternative transportation options to deter automobile ownership, many citizens, especially those living outside dense urban areas, still need or want to purchase their own automobiles. Municipalities can create incentives to encourage citizens to purchase vehicles that produce less GHG emissions. For example, cities such as Salt Lake City, Aspen, Baltimore, Los Angeles, Albuquerque, Hartford and New Haven already have various forms of free or discounted parking for hybrid or high efficiency drivers.[77] [78]

Incentives for Hybrid and Low Emission Vehicle Use

CASE STUDY: Ferndale, MI

Since May 2006, drivers of fuel-efficient vehicles in a suburb outside of the Motor City are saving money on more than fuel. The city of Ferndale recently passed a local ordinance, the first of its kind in Michigan, that enables drivers of cars that get 30-miles-a-gallon or better, to park for free at the city's parking meters.[79] In order to pay for the administrative costs of the program, car owners must register their vehicle and pay $8 to get a permit for the free meter parking. Craig Covey, the Ferndale council member who proposed the ordinance, explained the city's decision, "We're all hurting with the high gas prices and this is a small, symbolic step to send a message: We care about progress."[80]

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[77] "Save on fuel, and park free, too. Councilor suggests hybrid owner perk" Boston Globe, Nov 2005, www.boston.com/news/local/articles/2005/11/03/save_on_fuel_and_park_free_too/, 15 October 2006.
[78] City of Hartford, Connecticut (www.hartford.gov/news/PR71405parking.pdf). Vehicle owners who can demonstrate that they drive a vehicle that gets at least 30 miles per gallon - both city and highway-qualify for a 50% discount for monthly parking patrons at three Downtown Hartford parking garages, www.newenglandfutures.org/issues/energy/bestpractices/, 3 October 2006.
[79] "Drive a hybrid? You don't have to feed the meter in Ferndale" Detroit Free Press, April 2006, www.freep.com/apps/pbcs.dll/article?AID=/20060829/NEWS99/60829020, 3 October 2006.
[80] Ibid.

Additional Resources

Road Tax Discount for Car-Free Households. The City of Austin, Texas has an innovative way of financing transportation infrastructure that rewards households that reduce their vehicle ownership. City utility bills include a "Transportation User Fee" that averages $30 to $40 annually for a typical household. This charge is based on the average number of daily motor vehicle trips made per property, reflecting its size and use. The city provides exemptions to residential properties with occupants that do not own or regularly use a private motor vehicle for transportation, or if they are 65 years of age or older. [81]

Commuter Choice is a nationwide partnership designed to help employers create customized solutions to their employees' commuting challenges. Commuter Choice can also include communities working with residents, schools working with students, and even developers working with future tenants to provide and promote choices for travelers. www.commuterchoice.com/index.php?page=employers

Ride Arrangers, Denver Regional Council of Governments
RideArrangers helps businesses and individuals ease traffic congestion and reduce pollution by promoting use of alternative transportation. Using the latest transportation management ideas to keep traffic moving, RideArrangers maintains air quality and preserves the quality of life that Denver metro area residents know and expect. www.drcog.org/index.cfm?page=RideArrangers

Stormwater Management Fees to reduce parking supply and instigate transportation management programs. The City of Bellingham charges stormwater fees of $3 a month for smaller buildings with 300 to 1,000 square feet of impervious surfaces and $5 per 3,000 square for larger buildings. This indicates annualized costs 2 to 5.5 cents per square foot of impervious surface. (www.vtpi.org/tca/tca0515.pdf)

Travel Matters
Includes an interactive emissions calculator, on-line emissions maps and a learning/resource center.
www.travelmatters.org

[81] See www.vtpi.org/tdm/tdm119.htm and www.ci.austin.tx.us, 30 September 2006.